

We claim:

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1. A system for managing one or more storage devices in a computing system having a client connected to a server over a network, the system comprising:
at least one agent operating on the server, the agent communicating with a storage device;
an agent manager operating on the server, the agent manager tracking the agents;
an applet operating on the client and adapted to provide a user interface for managing the storage devices, the applet communicating with the agent over the network to obtain information about the storage devices; and
an applet manager operating on the client, the applet manager invoking and communicating with the applet.

2. The system of claim 1, further comprising:
a firmware file adapted to be transferred from the applet over the network to an agent.

3. The system of claim 2, wherein the firmware file includes a copy of the firmware with a data header embedded therewith.

1 4. The system of claim 2, wherein the applet transfers over the
2 network the firmware file to the agent so that the firmware can be downloaded
3 to the storage device.

1 5. The system of claim 4, wherein the applet instructs the agent to
2 download the firmware to the storage device, and in response, the agent
3 initiates a process for downloading the firmware to the storage device.

1 6. The system of claim 3, wherein the firmware file further includes
2 data corresponding to the version of the firmware.

1 7. The system of claim 3, wherein the firmware file further includes
2 data corresponding to identification of the storage device type.

1 8. The system of claim 3, wherein the firmware file further includes
2 data corresponding to an encrypted password.

1 9. The system of claim 3, wherein each agent is comprised of a first
2 layer communicating with the storage devices, a second layer having data
3 corresponding to the object representation of the storage device, and a third
4 layer adapted to certain command data for controlling an operation of the
5 storage device.

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1 10. The system of claim 9, wherein each agent further comprises a
2 fourth layer adapted to communicate with the network.

1 11. The system of claim 10, wherein the fourth layer is adapted to
2 support multiple protocols.

1 12. The system of claim 9, wherein the third layer is adapted to
2 support multiple command sets.

1 13. The system of claim 3, wherein the data header is adapted to
2 include one or more data sets corresponding to storage devices having
3 different characteristics.

1 14. The system of claim 3, wherein the data header is adapted for
2 downloading firmware of variable segment size.

1 15. The system of claim 1, wherein the agent registers with the agent
2 manager after the agent is created.

1 16. The system of claim 15, wherein the applet communicates with
2 the agent manager using a single port.

1 17. The system of claim 1, wherein the applet communicates with the
2 agent through the agent manager.

1 18. The system of claim 1, wherein the applet has an adapter module,
2 a device module, and a subsystem module.

1 19. The system of claim 18, further comprising:
2 a device interface object in communications with the device
3 module and the adapter module
4 at least one subsystem device object in communications with the
5 subsystem module and the adapter module;
6 an adapter object in communications with the subsystem module
7 and the adapter module; and
8 a network object in communications with the subsystem module
9 and the server.

1 20. The system of claim 3, wherein the applet includes one or more
2 objects instantiated in the client.

1 21. The system of claim 3, wherein the applet has a module for
2 interfacing with the object representation of the storage device.

1 23. The system of claim 1, wherein before the applet can
2 communicate with the agent, the applet provides said identification information
3 to the agent manager, and the agent manager authenticates the applet.

1 24. The system of claim 1, wherein the agent manager polls the
2 agents to determine if the agents are operating on the server.

1 25. The system of claim 3, further comprising:
2 a storage management database maintained by the agent containing data
3 about the storage devices.

1 26. The system of claim 25, wherein the applet can access the data
2 about the storage devices by generating a request to said agent.

1 27. The system of claim 25, wherein the applet can access the data
2 about the storage devices by generating a request to said agent manager.

7 instructing an agent operating on the server to download the firmware
8 to the storage device; and

9 responsive to the instructing step, initiating a thread for downloading
10 the firmware to the storage device.

1 33. The method of claim 32, wherein the creating step further
2 comprises:
3 including, in the firmware file, data corresponding to the version of the
4 firmware; and
5 including, in the firmware file, data corresponding to identification of
6 the storage device type.

1 34. The method of claim 32, wherein the creating step further
2 comprises:
3 including, in the image file, data corresponding to an encrypted
4 password associated with the firmware.

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